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Full clinical cases submission template

TITLE OF CASE <i>Do not include "a case report"</i>
Kinesiology taping as an adjunct for pain management in cancer?
SUMMARY <i>Up to 150 words summarising the case presentation and outcome (this will be freely available online)</i>
We present the case of a 46-year old woman who developed severe pain described as 'tearing' and 'searing' in the left side of mid-trapezius region near thoracic 8 vertebra (T8). The patient had undergone surgery for T8 fracture which had resulted from metastasis (secondary breast cancer). A community nurse referred the patient for physiotherapy assessment and treatment for her musculoskeletal pain and related symptoms that had affected her mobility and functional activities. The patient was treated with soft tissue therapy with the addition of kinesiology taping on follow-up visits. Kinesiology tape was applied over her left-side trapezius region and left shoulder. The patient reported significant reductions in pain severity and felt greater control and stability over her left shoulder region, which resulted in better function and overall quality of life measures. The patient did not report any adverse effects.
BACKGROUND <i>Why you think this case is important – why did you write it up?</i>
<p>People with cancer especially in advanced stages have to cope with a number of distressing symptoms including pain, fatigue, lack of energy, oedema, dyspnoea and abdominal discomfort that result in reduced quality of life (1-4). Management of these symptoms is pharmacotherapy-led with a trade-off between symptom relief and adverse effects. Non-pharmacological interventions are often used in combination with medication to alleviate symptoms.</p> <p>Kinesiology taping involves the application of elasticated, thin, porous, water-resistant, cotton-based adhesive tape to the skin. It has become popular in recent times through its use by high profile elite sports people. The tape and technique was developed in 1970s for the management and rehabilitation of sports-related musculoskeletal injuries (5). Nowadays kinesiology taping is used by physical and sports therapists, osteopaths, chiropractors and nurses to manage musculoskeletal pain, cancer-related lymphedema and stroke-related spasticity (6, 7). Kinesiology tape is available without prescription in variety of shapes, sizes, colours and patterns (e.g. Kinesio® Tex Tape, Rocktape) and can be worn for up to 5 days whilst during normal activities of daily living including showering. Kinesiology taping differs from conventional taping and bandaging techniques that often use rigid zinc oxide tape because it does not restrict movement and appears to be better tolerated (8). Conventional taping techniques stabilise injuries by reducing loading and restricting movement of injured body parts. In contrast, kinesiology tape is applied to the skin under mild tension by stretching the tape and / or stretching the skin (e.g. by flexing or extending the joint). This provides a pulling force to the skin which may correct articular malalignments and influence proprioception and muscle function (9). It is also claimed that kinesiology taping "lifts" the epidermis to produce regions of decompression beneath the skin and that this improves microcirculation of the blood and lymph that relieves swelling and pain (9). In addition, it is claimed that kinesiology taping stimulates low threshold cutaneous mechanoreceptors, especially during movement that could affect proprioception and also modulate pain via inhibition of nociceptive transmission in the central nervous system ('closing the pain gate') (10). Scientific evidence to support these claims is lacking.</p> <p>Research evidence on the effectiveness of kinesiology taping to improve pain and function is limited to musculoskeletal conditions in non-cancer populations including patellofemoral pain syndrome, rotator cuff tendinopathy. There are at least 19 systematic reviews and meta-analysis with insufficient evidence to judge outcome because of too few randomised controlled trials (RCTs) and those that exist have small sample sizes. A recent systematic review by Lim</p>

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and Tay (11) evaluated kinesiography taping for musculoskeletal pain and disability lasting for more than 4 weeks and included 17 studies. They found that kinesiography taping was superior to minimal or no intervention for musculoskeletal pain and disability that lasts for more than 4 weeks but not superior to other treatment approaches.

Kinesiography taping is currently used by some practitioners to alleviate lymphedema and associated symptoms in cancer patients. There are two systematic reviews (6) (7) that have identified only two studies. Tsai et al. (12) found no differences in excess limb size or water composition between single-layered bandage and kinesiography tape in 41 patients with decongestive lymphatic therapy for breast-cancer-related moderate to severe lymphedema. Patients reported that they preferred kinesiography tape because it was easier to use, more comfortable and convenient, and allowed longer wearing time. Białoszewski et al. (13) found that kinesiography taping added to standard lymphatic massage produced a faster reduction of oedema compared with standard lymphatic massage on its own in 24 non-cancer patients with postoperative oedema.

Recently, we evaluated reports of the use of kinesiography taping in cancer (14). We found seven studies with a comparison group (including RCTs) and nine case series/reports without a comparison group in breast cancer for lymphedema and related outcome measures including pain, grip strength, limb range of motion (ROM) and quality of life measures. There was weak evidence for benefits of kinesiography taping as an adjunct to complete decongestive therapy for managing cancer-related lymphedema.

We describe a patient with secondary breast cancer who was given kinesiography taping treatment to manage severe pain and improve function of the upper limb.

CASE PRESENTATION *Presenting features, medical/social/family history*

A 46-year old woman diagnosed with primary breast cancer in August 2011 and secondary breast cancer in 2014, underwent spinal surgery in December 2014 due to fracture of the thoracic 8 vertebra (T8) resulting from metastases. A community nurse referred the patient for physiotherapy for assessment and treatment of musculoskeletal-related symptoms that had affected her mobility and function. The patient was seen by the physiotherapist (JR) at the hospice outpatient department on 18th December 2015. The patient's primary complaint was severe pain with sensations of 'tearing' and 'searing' accompanied by stiffness in the left side mid-trapezius region near the site of the fracture. Symptoms were attributed to the consequential effects of the disease and surgery and poor posture resulting from patient's hypervigilance to pain. The patient was found positive for signs of soft-tissue tightness around the region of pain and her symptoms had adversely affected her activities of daily living and quality of life. She was treated by JR with low level myofascial tissue release techniques including passive stretching of the soft tissue which alleviated her symptoms. The patient returned to clinic distressed and anxious on 12th January 2016 because the symptoms had reappeared.

INVESTIGATIONS *If relevant*

DIFFERENTIAL DIAGNOSIS *If relevant*

TREATMENT *If relevant*

The patient was treated with soft tissue therapy techniques by JR during the first consultation on 18th December 2015. This alleviated her symptoms. The patient returned to clinic on 12th January 2016 distressed and anxious reporting that symptoms had reappeared. JR in addition to the soft tissue therapy techniques that he employed earlier, decided to try kinesiography tape

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to manage pain and provide support to the shoulder. Three strips of blue coloured Tiger K Tape® (width = 5 cm; Length ~ 20 cm) stretched approximately 20% more than their original length were applied over the left side trapezius region. During the application of kinesiology tape the patient assumed a position where the cervicothoracic spine remained flexed with the arm hanging forwards stretching the shoulder (Figure 1). The tape was applied directly from superior to inferior direction over the painful site which corresponded to the affected dermatome.

The patient was provided with basic information about the principles and practice of kinesiology tape and advised to continue wearing tape until her next appointment which was scheduled a week later i.e. 19th Jan 2016. The patient was prescribed low intensity exercise plan for muscular lengthening and advised to continue with normal daily living activities including showering or bathing with the tape in situ and to contact clinic if any problems arose. A telephone conversation between JR and the patient on 14th January 2016 confirmed that kinesiology tape was still in situ and in good condition, with minimal lifting of tape edges from the skin. The patient reported substantial reduction in the severity and occurrence of painful episodes and that the left shoulder girdle area felt more 'stable'. The patient reported that she had more control of the shoulder joint complex whilst performing movements. No adverse effects were reported and the patient reported satisfaction with treatment. The patient was scheduled to return to clinic for follow-up assessment on 19 January 2016.

OUTCOME AND FOLLOW-UP

The patient attended clinic on 19 January 2016 for follow-up and was re-assessed by JR. Kinesiology tape was in situ and in good condition, although there was lifting and curling of tape edges from the skin. The patient reported that pain severity reduced by ~50% compared with pre-treatment and that the severity of tearing and searing sensations over her left mid-trapezius area had reduced by ~85%. The kinesiology tape was removed by JR. Inspection of skin area under the tape revealed mild redness which was attributable to the tape removal. The patient reported that she had not experienced any adverse events. JR applied new kinesiology tape in an identical manner to that described for the first treatment.

The patient attended clinic on 2nd February 2016 with the tape in situ. The patient reported satisfaction with kinesiology tape treatment and that she continued to experience reductions in pain severity and significant improvements in functional activities. The patient reported that she would like to continue using kinesiology taping and so JR provided information about purchasing tape over the counter (and internet) and then demonstrated how to apply the kinesiology tape. It was decided that the husband would be the best person to apply tape.

The patient attended clinic on 23 February 2016 and was again assessed by JR. The patient seemed relaxed. The patient reported that she had purchased kinesiology tape (Rocktape) from a local store in Leeds which was readily available. Her husband had applied the kinesiology tape without difficulty after about every 5 days with 12-24 hours of intermittent break periods before reapplication. The patient reckons that intermittent breaks are necessary for moisturising the skin and allowing it to 'breathe' and to avoid getting the skin 'red' and 'sore'. After a few trials with Rocktape and then upon subsequent use with Tiger K Tape, the patient asserted that the Tiger K Tape® clings on to the skin better and longer and so was preferable to her.

The patient reported that kinesiology taping continued to be of benefit as she is able to self-manage her pain which has improved her functional activities and emotional wellbeing. No adverse effect was reported.

The patient continued to wear kinesiology tape until the report was being drafted (last contact made with the patient by GB on 19 April 2016).

DISCUSSION *Include a very brief review of similar published cases*

There is a paucity of reports on the use of kinesiology taping to manage musculoskeletal pain in cancer patients. A pilot study without a comparison group found that kinesiology taping improved asymmetry between scapula upper ribs and shoulder in 12 post-mastectomy breast cancer patients (15). Pyszora et al have reported four cases on the use of kinesiology taping added to integrated neuromuscular inhibition and myofascial release techniques, and exercise in elderly patients with advanced lung cancer, multiple myeloma and secondary breast cancer (16, 17). They found improvements in pain, physical function and quality of life, and that the patients were very satisfied with kinesiology taping as a treatment. Kinesiology taping has also been shown to improve cervical pain and shoulder ROM and strength when used as an adjunct to physiotherapy treatment in a middle-aged woman that underwent partial glossectomy and neck dissection following tongue cancer (18).

There is weak evidence that kinesiology taping improves lymphedema. Case reports and studies without a comparison group suggest that kinesiology taping is beneficial or is as effective as conventional treatments for reducing lymphedema (e.g. compression sleeves) in cancer (19-27). These reports also suggest that kinesiology taping may be beneficial for mitigating associated symptoms in the lymphedema limb including pain (20), muscle tension (19), feeling of fullness/tightness/heaviness (20) (22), and improving joint ROM (19) and tissue texture (21) with overall improvements in disability (22) and activities of daily living (27). Kinesiology tape is comfortable to wear compared with compression garments and may be an alternative option for patients with poor short-stretch bandage compliance or to those that are contraindicated to decongestive compression therapy (20, 21, 23, 24, 27).

In summary, the patient in our report found kinesiology taping beneficial for managing pain, and for improving function and emotional wellbeing with no adverse effects. Kinesiology tape is inexpensive, safe, convenient to use and can be administered by a caregiver. Precautions include open wounds, dermatological diseases, allergy to adhesive tape and those particularly relevant in cancer include frail skin susceptible to irritation and damage. Some manufacturers of kinesiology tape have expressed fear of increasing blood flow and spread of cancer cells when using the tape for individuals with active cancer, although there is no evidence to support and this hazard would also apply to many lymphedema treatments currently in use. Adverse effects associated with kinesiology taping are minimal (28, 29).

We hope that this case will catalyse interest on the clinical utility of kinesiology taping as a treatment option for management of pain, swelling and other symptoms in cancer.

LEARNING POINTS/TAKE HOME MESSAGES *3 to 5 bullet points – this is a required field*

- Kinesiology taping is a low cost simple easy-to-apply non-pharmacological treatment that is being increasingly used in the management and rehabilitation of musculoskeletal-related injuries including pain in non-cancer settings.
- The case presented here demonstrates that kinesiology taping may have a role in the management of musculoskeletal pain and related outcome measures including physical function and quality of life in a selection of cancer patients.
- Adverse effects associated with kinesiology taping are minimal and could include occurrence of skin soreness of mild to moderate intensity in non-allergic persons if kinesiology tape is allowed to remain in situ for too long (i.e. >3-5 days).
- Carefully selected patients may benefit from kinesiology taping as an adjunct to other therapies within the continuum of cancer care, especially as it can be applied by the patient themselves and or by their carers.
- Future research on the use and scope of kinesiology taping in cancer is warranted.

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FIGURE/VIDEO CAPTIONS *figures should NOT be embedded in this document*

Legend to Figure 1

Application of 3 strips of kinesiology tape with approximately 20% stretch applied from superior to inferior direction with soft tissues in the region of shoulder girdle and upper back in lengthened (stretched) position.

PATIENT'S PERSPECTIVE *Optional but strongly encouraged – this has to be written by the patient or next of kin*

"Within 48 hours of taping applied, the symptoms had virtually disappeared and I was able to carry out everyday tasks to the same degree as before the initial pain. The use of the tape has been nothing short of miraculous in symptom management. Without

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the tape I was physically and psychologically distressed, the relief the tape brought helped me to regain movement and the ability to live as best as I can. Without the tape my back and postural muscles felt as if they were permanently in spasm. The tape taught my back muscles where they should sit and brought a much needed feeling of stability."

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Date: 26 May 2016

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*Contributorship statement

MJ, MB and GB conceived of the study, JR executed the study at a hospice. This project was funded by a PhD student bursary from the Jane Tomlinson Appeal, GB is the grant holder. JR undertook physiotherapy-related assessment and treatment responsibilities of this case. All authors contributed to the writing of the manuscript and approved the final manuscript. No outside contribution was requested or received during the preparation of this article.

*Conflicts of interest

We declare that we have no conflicts of interest concerning this article.

* Caseload

The use of kinesiology taping in cancer patients especially in hospice settings (where JR worked) is not a very common practice as the patients are likely to be poorly. The sports therapy technique though may have a greater role in oncology and palliative / supportive care settings and is likely used as an adjunct for lymphedema management (as suggested by the British Lymphology Society and the International Lymphoedema Framework). Initial findings of our survey of healthcare professionals working in the oncology and palliative /supportive care settings (<https://surveys.leedsbeckett.ac.uk/snapwebhost/s.asp?k=143983167621>) suggest that kinesiology taping is used in select patients (?may be on trial and error basis) and is useful in mitigating symptoms related to cancer like pain, swelling and breathlessness.

Editor-in-Chief
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Subject: Publication of a case report in the journal *BMJ Case Reports*

Dear Dr Seema Biswas,

We would like to submit a case report entitled “Kinesiology taping as an adjunct for pain management in cancer?” in your journal. This is a letter to brief you about the background and novelty of the topic we wish to publish. The study was completed as part of an ongoing PhD project at Leeds Beckett University which is an investigation of the use of kinesiology taping for the management of cancer-related symptoms.

Background and novelty

Current strategies for management of pain and other symptoms in cancer is challenging and there is a pressing need to explore newer adjuncts given undesirable effects associated with mainstay pharmacotherapy. There has been increased recognition of holistic biopsychosocial approach to pain management and importance to non-pharmacological adjuncts. Kinesiology taping is a simple, non-drug, economical and easy-to-apply therapeutic technique that could mitigate pain and some of the symptoms associated with cancer. Through publication of this case report we intend to catalyse further discussion and clinical and basic research with an overall aim to improve patients' function and quality of life.

I will be grateful if you would kindly review the manuscript that is submitted along with this covering letter. Should you have any queries before making a decision, please do not hesitate to contact me. On behalf of all the contributors I will act and guarantor and will correspond with the journal from this point onward.

I look forward to hearing from you. Thank you

Sincerely,
Gourav Banerjee

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Figure 1

